UNITED STATES PATENT AND TRADEMARK OFFICE

W

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,486	07/13/2001	Teemu Parkkinen	297-010462-US(PAR)	6061

2512 7590 03/10/2005

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

EXAMINER	
CHOU, ALBERT T	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/904,486	PARKKINEN ET AL.	
	Examiner	**Art Unit**	
	Albert T. Chou	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,13-18,22,24,25,32 and 33* is/are rejected.

7)☒ Claim(s) *6-8,10-12,19-21,23,26-31,34 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 9, 13-18, 22, 24, 25 32 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Haskell et al. (US Patent Number: 5,742,343), hereinafter referred to as Haskell.

3. Regarding claim 1, Haskell teaches a scalable encoder (Figure 1; col. 4, line 59; *a scalable encoder*) for encoding the high resolution video (Figure 1; col. 5; line 1; *for encoding a media signal*) comprising:

- A **Base Encoder c3140** (Figure 1; col. 5, line 6; *first encoding means for producing a first data stream*), which outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5; lines 6-7; *a core data stream relating to the media signal, having a first bit-rate)*;
- An **Enhancement Encoder c3180** (Figure 1; col. 5, line 12; *second encoding means for producing a second data stream*) which outputs a variable bit-rate coded bit-stream on **Bus c3250** (Figure 1; col. 5; lines 13-14; *which comprises a set of enhancement data streams relating to the media signal, having a second bit-rate*);

- A **System Multiplexer c3250** (Figure 1; col. 5; lines 49-50; *a multiplexer*) which combines the two bit streams (Figure 1; col. 5; lines 50-51; *for combining at least the first data stream and the second data stream*) in preparation for transmission on **Channel c3260** (Figure 1; col. 5, lines 50-51; *a third data stream)*; and
- Control means which resides within the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 25-30; *control means, which is arranged to receive control information*). The fullness signal from **Buffer c3190** appearing on **Bus c3200** passes to both the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; *to determine the first data stream in the third data stream*). **Base Encoder c3140** utilizes this fullness signal to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art (Figure 1; col. 5, lines 31-33; *according to the control information and to adjust the combination of the first data stream in the third data stream*). The fullness signal from **Buffer c3210** appearing on **Bus c3225** passes to **Enhancement Encoder c3180** (Figure 1; col. 5, lines 34-35; *to determine the 2nd data stream in the third data stream*). The **Enhancement Encoder c3180** utilizes buffer fullness signals, **c3200 and c3225**, in controlling the data flow into **Buffer c3210** (Figure 1; col. 5; lines 40-42; *according to the control information and to adjust the second data stream in the third data stream*).

4. Regarding claim 2, Haskell teaches the **Base Encoder c3140** (Figure 1; col. 5, line 6; _the first encoding means_) outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5; lines 6-7; _the first encoding means is variable rate encoding means)_.

5. Regarding claim 3, Haskell teaches the fullness signal (Figure 1; col. 5, lines 28-30; _the control means_) from **Buffer c3190** appearing on **Bus c3200** passes to the **Base Encoder c3140** (Figure 1; col. 5; lines 28-30; _for determining the target bit rate for the data stream produced by the first encoding means_). **Base Encoder c3140** utilizes this fullness signal to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art (Figure 1; col. 5, lines 31-33; _to adjust the bit-rate of the said data stream_).

6. Regarding claim 4, Haskell teaches the control means inside **Base Encoder c3140** comprises **Buffer c3190** and its associated fullness signal **c3200** (Figure 1; col. 5, lines 30-31; _the control means further comprising a feedback loop_), **Motion Estimator 170,** its output signal, **Motion Vector 175**, and **Subtractor 160** (Figure 18; col. 9, lines 33-37; _comparison means_), and controller components such as **Transformer 270, Quantizer 290, Quantization Adapter 360, Inverse Quantizer 380, Inverse Transformer 400** etc.(Figure 18; col. 9, lines 49-56; col. 10, lines 4-7; _a controller unit_);

- **Base Encoder c3140** utilizes the fullness signal **c3200 / c350** (Figures 1 & 18; col. 5, lines 30-31; _said feedback loop_) to control the data flow into **Buffer c3190** (Figures 1 & 18; col. 5, lines 30-31; _said feedback loop arranged to_

transfer information on an estimated actual bit-rate of said data stream to the comparison means);

- A frame **Reorganizer Block ORG 130** reorders the input frames in preparation for coding and outputs the result on **Buses 140** and **150** (Figure 18; col. 9, lines 28-30; *said comparison means being supplied with a target bit-rate*). **Subtractor 160** computes the difference between the input frame on **Bus 140** and (for P and B types) the prediction frame on **Bus 250** (Figure 18; col. 9, lines 47-49; *arranged to calculate the difference between the estimated actual bit-rate of said data stream and target bit-rate*). The result appears on **Bus 260** is transformed by **Transformer 270** and quantized by **Quantizer 290** into integer values (Figure 18; col. 9, lines 49-51; *to provide the calculated difference to the controller unit*).
- Quantized transform coefficients pass on **Bus 300** to **Variable Encoder 310** and **Inverse Quantizer 380** (Figure 18; col. 9, lines 51-53; *said controller unit being arranged to output a control signal to said one of the first and second encoding means, as a response to receiving said calculated difference*); and
- **Variable Encoder 310** (Figure 18; col. 10, lines 16; *said one of the first and second encoding means*) encodes quantized transform coefficients input on **Bus 300, Motion Vector** on **Bus 305** and quantizer step sizes qs input on **Bus 375** into a variable bit-rate bit-stream that is output on **Bus 320**. (Figure 18; col. 10, lines 16-21; *to adjust the bit- rate of said data stream according to the received control signal from the controller unit*).

7. Regarding claim 5, Haskell teaches **Inverse Quantizer 380** of **Base Encoder c3140** (Figure 18; col. 9, line 54; *said one of the first and second encoding means)* converts the quantized transform coefficients back to full range and passes the result via **Bus 390** to **Inverse Transform 400**, which outputs pel prediction error values on **Bus 410** (Figure 18; col. 9, lines 54-60; *to adjust quantization of coefficients representing the media signal*). **Adder 420** adds the prediction error values on **Bus 410** to the prediction values on **Bus 240** to form the coded base layer pels on **Buses 430** and **440**. (Figure 18; col. 9, lines 54-60; *to adjust quantization of coefficients representing the media signal according to the control signal*).

8. Regarding claim 9, Haskell teaches the **Base Encoder c3140** (Figure 1; col. 5, line 6; *the first encoding means*) outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5; lines 6-7; *the first encoding means is variable rate encoding means)*. Being able to output a variable bit-rate coded bit stream, it is inherent that the **Base Encoder c3140** must have a set of available encoding algorithms.

9. Regarding claim 13, Haskell teaches the control means which resides within the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 25-30; *control means*). The fullness signal from **Buffer c3190** appearing on **Bus c3200** passes to both the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; *for determining a first target bit-rate for first data stream*). **Base Encoder c3140** utilizes this fullness signal to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art (Figure 1; col. 5, lines 31-33; *according to said control information*). The fullness signal from

Buffer c3210 appearing on **Bus c3225** passes to **Enhancement Encoder c3180** (Figure 1; col. 5, lines 34-35; *for determining a second target bit-rate for the second data stream*). The **Enhancement Encoder c3180** utilizes buffer fullness signals, **c3200 and c3225**, in controlling the data flow into **Buffer c3210** (Figure 1; col. 5; lines 40-42; *according to said control information*).

10. Regarding claim 14, Haskell teaches that data are read out of **Buffer c3190** (Figure 1, col. 5, line 48; *a multiplex buffer for storing data*) and c3210 (Figure 1, col. 5, line 48; *a multiplex buffer for storing data*) under the control of **System Multiplexer c3250,** which combines the two bit streams in preparation for transmission on **Channel c3260** (Figure 1; col. 5, lines 50-51; *a multiplexer for transmission)*. The fullness signal (Figure 1; col. 5; lines 28-30; *said occupancy level indicating the current amount of data stored in the multiplex buffer*) from **Buffer c3190** appearing on **Bus c3200** passes to both the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; *multiplex buffer is connected to the control means for delivering control information indicating the occupancy level*).

11. Regarding claim 15, Haskell teaches that bits are read out of the buffers at a different instantaneous rate that 4 bits are written into the buffers (Col. 5; lines 22-23). Because of this, there is the possibility that overflow or underflow might occur (Col. 5; lines 24-25). To alleviate this possibility **Buffer c3190** outputs a fullness signal on **Bus c3200**, and **Buffer c3210** outputs a fullness signal on **Bus c3225** (Col. 5; lines 25-27). **Base Encoder c3140** utilizes this fullness signal to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art

(Figure 1; col. 5, lines 31-33; _to adjust the target bit-rates so that the ratio of the target bit-rates is substantially constant as long as the occupancy level of the buffer is below a certain first threshold_).

12. Regarding claim 16, Haskell teaches that the fullness signal from **Buffer c3190** appearing on **Bus c3200** passes to both the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; _to receive the first control information_). The fullness signal from **Buffer c3210** appearing on **Bus c3225** passes to **Enhancement Encoder c3180** (Figure 1; col. 5, lines 34-35; _to determine the second control information_). The **Enhancement Encoder c3180** utilizes buffer fullness signals, **c3200 and c3225**, in controlling the data flow into **Buffer c3210** (Figure 1; col. 5; lines 40-42; _control information indicating a preferred combination of the firs and second data stream_).

13. Regarding claim 17, Haskell teaches that the **Enhancement Encoder c3180** may utilize the sum of the two fullnesses (Col. 5; lines 42-43; _control information indicating a preferred combination of the first and the second data streams_). Haskell also teaches that if at any time **Buffer c3190** were deemed too full, then **Enhancement Encoder c3180** could cease producing data altogether for the enhancement layer, thereby allocating the entire transmission bit-rate to the base layer (Figure 1; col. 5; lines 44-47; _determine a preferred ratio of the target bit-rate of the first data stream and the target bit-rate of the second data stream_).

14. Regarding claim 18, Haskell teaches **Base Encoder c3140** also outputs a replica decoded base layer video signal on **Bus c3150** (Figure 1; col. 5, lines 8-10; _comprising_

decoding means for decoding said first data stream into a decoded signal), which passes to a **Spatial Interpolator c3160**. Haskell also teaches (Figure 18) **ORG 470** reorders the high-resolution video frames to match the order of the base layer and outputs the result on **Bus 480** (Figure 18; col. 19, lines 27-29; *said second encoding means are arranged to encode a difference signal*). **Subtractor 490** computes the difference between the input picture (*the media signal*) on **Bus 480** that is to be coded and a spatial prediction picture *(the decoded signal*) on **Bus 460** (Figure 18; col. 10, lines 29-31; *the difference between the media signal and the decoded signal*). The prediction error is output on **Bus 500** transformed by **Transformer 510**, quantized by **Quantizer 530** and passed via **Bus 540** to **Variable Encoder 550** (Figure 18; col. 10, lines 31-34; *said second encoding means producing the second data stream having said second bit- rate*).

15. Regarding claim 22, Haskell teaches a scalable encoder (Figure 1; col. 4, line 59; *a scalable encoder*) for encoding progressive high resolution video (Figure 1; col. 5; line 1; *for encoding a media signal*) comprising a **Base Encoder c3140** which outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5, line 6; *the first encoding means is a base layer video encoding means*) and an **Enhancement Encoder c3180** which outputs a variable bit-rate coded bit-stream on **Bus c3250** (Figure 1; col. 5, line 12; *the second encoding means comprises at least one enhancement layer video encoding mean*).

16. Regarding claim 24, Haskell teaches a spatially scalable encoding system (Figure 1; col. 4, line 59; *a scalable encoder*) for a base layer consisting of lower

resolution, progressive television (Figure 1; col. 5; line 1; *a multimedia terminal*) or for a high-definition television HDTV (Col. 1, lines 8-11) having:

- A **Base Encoder c3140** (Figure 1; col. 5, line 6; *first encoding means for producing a first data stream*), which outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5; lines 6-7; *a core data stream relating to the media signal, having a first bit-rate)*;
- An **Enhancement Encoder c3180** (Figure 1; col. 5, line 12; *second encoding means for producing a second data stream*), which outputs a variable bit-rate coded bit-stream on **Bus c3250** (Figure 1; col. 5; lines 13-14; *which comprises a set of enhancement data streams relating to the media signal, having a second bit-rate*);
- A **System Multiplexer c3250** (Figure 1; col. 5; lines 49-50; *a multiplexer*) which combines the two bit streams (Figure 1; col. 5; lines 50-51; *for combining at least the first data stream and the second data stream*) in preparation for transmission on **Channel c3260** (Figure 1; col. 5, lines 50-51; *a third data stream)*; and
- Control means which resides within the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 25-30; *control means, which is arranged to receive control information*). The fullness signal from **Buffer c3190** appearing on **Bus c3200** passes to both the **Base Encoder c3140** and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; *to determine the first data stream in the third data stream*). **Base Encoder**

c3140 utilizes this fullness signal to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art (Figure 1; col. 5, lines 31-33; _according to the control information and to adjust the combination of the first data stream in the third data stream_). The fullness signal from **Buffer c3210** appearing on **Bus c3225** passes to **Enhancement Encoder c3180** (Figure 1; col. 5, lines 34-35; _to determine the 2nd data stream in the third data stream_). The **Enhancement Encoder c3180** utilizes buffer fullness signals, **c3200 and c3225**; in controlling the data flow into **Buffer c3210** (Figure 1; col. 5; lines 40-42; _according to the control information and to adjust the second data stream in the third data stream_).

17. Regarding claim 25, Haskell teaches that the progressive high resolution video enters the circuit of **C3** on **Bus c3100** and passes to a **Spatial Decimator c3120**, where it may be low-pass filtered before reducing the number of pels to a lower base-layer resolution (Figure 1; col. 5, lines 1-4; _an input element for inputting preference information_). The decimated base layer video is then output on **Bus c3130** and passes to a **Base Encoder c3140**, which outputs a typically variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5, lines 4-7). **Enhancement Encoder c3180** utilizes the upsampled video on **Bus c3170** as a prediction (Figure 1; col. 5, lines 15-18; _said preference information being delivered as control information to the control means)_, in order to increase the efficiency of coding the full resolution progressive video input on bus c3100 (Figure 1; col. 5, lines 15-18; _for inputting preference information indicating a preferred combination of the first data stream and the second data stream_).

18. Regarding claim 32, Haskell does not teach whether the spatially scalable encoder is H.324 compatible or not. However, Haskell teaches the spatially scalable encoder is for the HDTV, a multimedia terminal. It would have been obvious to one skilled in the art to implement the system to be H.324 compatible since H.324 is the industrial standard for handling the streaming audio and video data.

19. Regarding claim 33, Haskell teaches a method for scalable encoding (Figure 1; col. 4, line 59; _a method of scalable encoding_) for the high resolution video (Figure 1; col. 5; line 1; _for encoding a media signal_) comprising steps of:

- Using the **Base Encoder c3140** to encode the progressive low-resolution video signal **c3100** (Figure 1; col. 5, line 6; _a first data stream_), which outputs a variable bit-rate coded bit-stream on **Bus c3230** (Figure 1; col. 5; lines 6-7; _a core data stream corresponding to the media signal, having a first bit-rate)_;
- Using the **Enhancement Encoder c3180** (Figure 1; col. 5, line 12; _second data stream_), which outputs a variable bit-rate coded bit-stream on **Bus c3250** (Figure 1; col. 5; lines 13-14; _which comprises a set of enhancement data streams corresponding to the media signal, having a second bit-rate_);
- Using a **System Multiplexer c3250** (Figure 1; col. 5; lines 49-50; _a multiplexer_), which combines the two bit streams (Figure 1; col. 5; lines 50-51; _for multiplexing at least the first data stream and the second data stream_) in preparation for transmission on **Channel c3260** (Figure 1; col. 5, lines 50-51; _into a third data stream)_;

- Using the **Base Encoder c3140** to receive the fullness signal from **Bus c3200** and **Enhancement Encoder c3180** to receive the fullness signal from **Bus c3200** and **Bus c3225** respectively (Figure 1; col. 5; lines 25-30; *receive control information*);
- Using the fullness signal from **Buffer c3190** appearing on **Bus c3200** to pass to both the **Base Encoder c3140** (Figure 1; col. 5; lines 25-30; *to determine the first data stream in the third data stream according to the control information*) and the **Enhancement Encoder c3180** (Figure 1; col. 5; lines 28-30; *to determine the second data stream in the third data stream according to the control information*), and
- Using the **Base Encoder c3140** to utilize this fullness signal on **Bus c3200** to control the data flow into **Buffer c3190** according to any method of controlling data flow well known in the art (Figure 1; col. 5, lines 31-33; *adjusting the first data stream in the third data stream by affecting the first bit-rate*). The **Enhancement Encoder c3180** utilizes buffer fullness signals, **c3200 and c3225**, in controlling the data flow into **Buffer c3210** (Figure 1; col. 5; lines 40-42; *adjusting the second data stream in the third data stream by affecting the second bit-rate*).

Allowable Subject Matter

20. Claims 6-8, 10-12, 19-21, 23, 26-31, 34 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AC
Albert T. Chou
February 23, 2005

Chau T. Nguyen

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600